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# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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10274  
Orig: Exploration File  
cc: Inspection File

TO: Daron Haddock, Permit Supervisor

FROM: Priscilla Burton, Inspector *PB*

DATE: September 13, 1991

RE: Well Inspection, Proposed Refuse Disposal Site, Soldier Creek Coal Company, Soldier Canyon Mine, CEP/007/018, Folder #2, Carbon County, Utah

## SUMMARY

In the first quarter of 1991, SC3 installed four water monitoring wells in the proposed wasterock disposal site. Copies of the As Builts of the wells and sampling information were obtained. The wells were located on draft Plate 7-22-1. These sites were inspected.

## TECHNICAL INFORMATION

On September 10, 1991 an inspection was made of the four wells installed in the vicinity of the proposed waste disposal site. The wells were installed in the first quarter of 1991 with Division approval and supervision by Dave Darby.

Attached are the As Built well designs. The wells were air drilled. The sites were clean. The cement groutings were sound. The wells are all steel capped and locked. The well casings are all 4" PVC pipe. The two higher elevation wells do not require any reseeding. The two wells by Anderson reservoir will be seeded this fall.

The location of the wells is shown in the draft Plate 7-22-1 which will be submitted with the permit renewal information on October 11, 1991, along with monitoring information. The first quarter sampling was performed by EarthFax at the time of drilling. Mr. John Pappas has monitored the wells in the second and third quarters of this year according to the ground water analysis parameters defined in the Mining and Reclamation Plan.

When Mr. Pappas samples the wells, he bails the well until a constant electrical conductivity reading is obtained. Then, he takes a sample. Samples are packed in ice and sent to ACZ Laboratory in Steamboat Springs, Colorado. Field notes for the second and third quarters are included with this report, page 2.

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Well Inspection  
CEP/007/018  
September 13, 1991

Well Monitoring 1st and 2nd Quarters 1991

<u>DATE</u>	<u>WELL ID</u>	<u>DEPTH TO H2O</u>	<u>pH</u>	<u>EC mmhos/ cm</u>	<u>Temp F</u>
5/15	MW 1C	11.6'	7.32	11.35	62.2
8/23	MW 1C	14.0'	7.61	11.54	61.0
5/15	MW 1M	37.6'	9.29	11.30	63.8
8/23	MW 1M	21.4'	8.25	11.10	61.7
5/15	MW 2M	143.8'	7.77	9.23	65.2
8/23	MW 2M	142.4'	7.88	9.50	65.0
5/15	MW 3M	228.6'	7.37	19.56	63.8
8/23	MW 3M	217.3'	7.52	18.96	63.1

## CONCLUSION

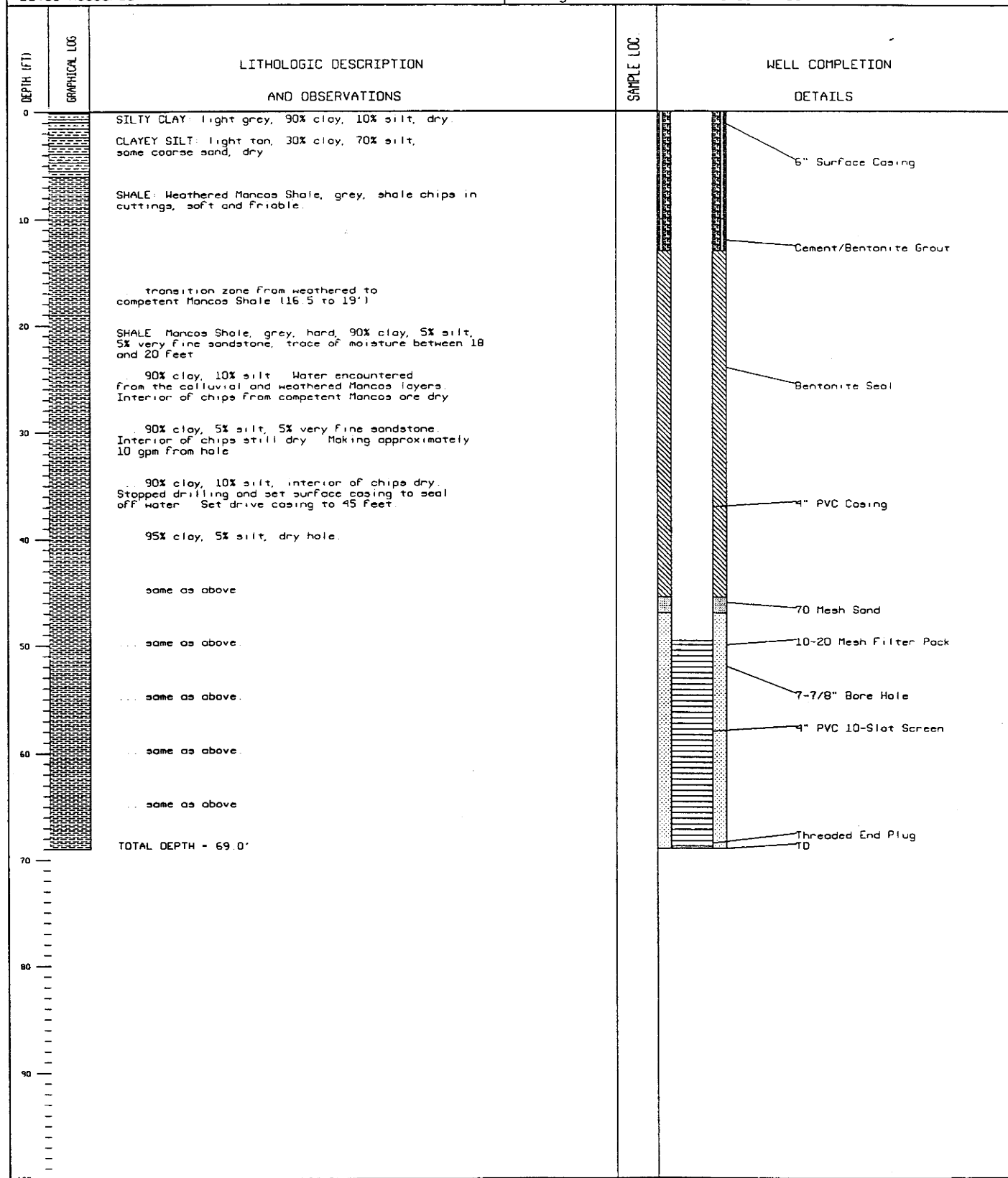
The installation of the wells has been conducted in an ecologically sound manner. Monitoring of the wells occurs quarterly. Information from well monitoring will be provided in the Mining and Reclamation Plan permit renewal to be received October 11, 1991. A Division hydrologist may be interested in sampling the wells with Mr. Pappas on a future inspection.

Attachments  
cc: R. Summers  
S. Falvey  
SOLDWELL.MPB

Project Name: REFUSE DISPOSAL AREA WELLS	Boring/Well Number: MW-1C
Owner/Client: SOLDIER CREEK COAL COMPANY	Boring/Well Location: 2, 242, 736.68 E 483, 247.87 N
Project Number: C159-06	Reference Elevation: 6, 066.43
Date Drilled: 03/21/91	Reference Point: GROUND SURFACE
Logged By: BKB	Drilling Contractor: ZIMMERMAN WELL SERVICE
First occurrence of G.W.: 10.31 Static W.L.: 9.25 Ft	Drilling Method: AIR-ROTARY Rig Type: INGERSOLL-RAND
Dates Measured: 03/22/91 03/28/91	Boring Depth (Ft): 17.5 Ft Well Depth (Ft): 17.5 Ft
	Boring Diameter (in): 7.88 in

DEPTH (FT)	GRAPHICAL LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	SAMPLE LOG	WELL COMPLETION DETAILS
1		SILTY CLAY light tan, 95% clay, 5% silt, dry		Cement/Bentonite Grout
				5" Surface Casing
				Bentonite Seal
				70 Mesh Sand
				7-7/8" Bore Hole
				4" PVC Casing
		CLAYEY SILT: light tan, 20% clay, 70% silt, 10% coarse sand, dry		
		SILTY CLAY light tan to tan with minor amounts of gray cemented siltstone fragments. Amount of siltstone chips progressively increases with depth to a high of 10% at a depth of 17.5 feet. From 9 to 17.5 feet the zone is moist		4" PVC 10-Slot Screen
				10-20 Mesh Filter Pack
				Threaded End Plug
				TO
		TOTAL DEPTH = 17.5 Ft		

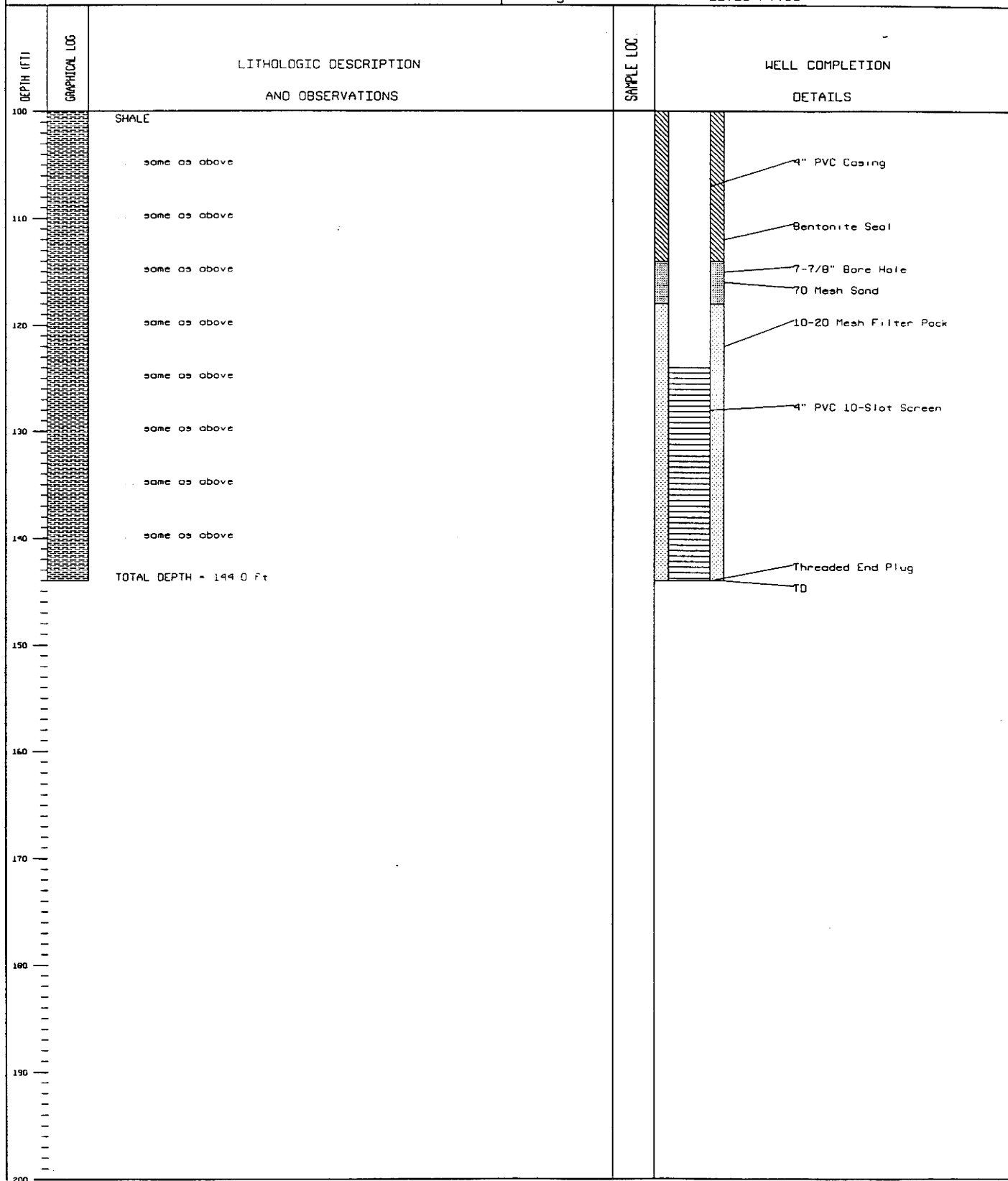
Project Name: REFUSE DISPOSAL AREA WELLS	Boring/Well Number: MW-1M
Owner/Client: SOLDIER CREEK COAL COMPANY	Boring/Well Location: 2, 242, 771.13 E 483, 265.64 N
Project Number: C159-06	Reference Elevation: 6,066.38
Date Drilled: 03/19/91	Reference Point: GROUND SURFACE
Logged By: TJS/BKB	Drilling Contractor: ZIMMERMAN WELL SERVICE
First occurrence of G W NA Static W.L.: NA	Drilling Method: AIR-ROTARY Rig Type: INGERSOL-RAND
Dates Measured: NA 03/28/91	Boring Depth (Ft): 69.0' Well Depth (Ft): 69.0'
	Boring Diameter (in): 12.25"/7.88"



Project Name: REFUSE DISPOSAL AREA WELLS	Boring/Well Number: MW-2M
Owner/Client: SOLDIER CREEK COAL COMPANY	Boring/Well Location: 2, 244, 371.92 E 484, 086.92 N
Project Number: C159-06	Reference Elevation: 6, 139.63
Date Drilled: 03/26/91	Reference Point: GROUND SURFACE
Logged By: BKB	Drilling Contractor: ZIMMERMAN WELL SERVICE
First occurrence of G.W. NA Static W.L. NA	Drilling Method: AIR-ROTARY Rig Type: INGERSOL-RAND
Dates Measured: NA 03/28/91	Boring Depth (Ft): 144.0 Ft Well Depth (Ft): 144.0 Ft
	Boring Diameter (in): 12.25"/7.88"

DEPTH (FT)	LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	SAMPLE LOG	WELL COMPLETION DETAILS
0		SILTY CLAY: medium brown, 90% clay, 10% silt, dry		Cement/Bentonite Grout
		CLAYEY SILT: brown to orange, 40% clay, 60% silt, some shale clasts, dry		6" Surface Casing
		SANDY SILT: medium brown to orange, 70% silt, 20% very fine sand, 10% clay, dry		
10		SANDSTONE: buff to pinkish buff, very fine grained sandstone, hard, some minor clasts of weathered shale.		
		SHALE: Mancos Shale, olive green, 90-95% clay, 5-10% silt, friable, dry.		
20		light grey, friable, minor amounts of gypsum present.		
		90% clay, 10% silt, poorly cemented, moist		
30		80% clay, 20% silt, poorly consolidated, moist.		4" PVC Casing
40		95% clay, 5% silt, well consolidated, dry.		
		... same as above.		
50		... same as above.		
		... same as above.		7-7/8" Bore Hole
60		... same as above.		
		... same as above.		
70		... same as above.		
		... same as above.		Bentonite Seal
80		... same as above.		
		... same as above.		
90		... same as above.		
		... same as above.		
100		... same as above.		

Project Name: REFUSE DISPOSAL AREA WELLS	Boring/Well Number: MW-2M
Owner/Client: SOLDIER CREEK COAL COMPANY	Boring/Well Location: 2,244,371.92 E 484,086.92 N
Project Number: C159-06	Reference Elevation: 6,139.63
Date Drilled: 03/26/91	Reference Point: GROUND SURFACE
Logged By: BKB	Drilling Contractor: ZIMMERMAN WELL SERVICE
First occurrence of G W NA Static W.L. NA	Drilling Method: AIR-ROTARY Rig Type: INGERSOL-RAND
Dates Measured: NA 03/28/91	Boring Depth (Ft): 144.0 Ft Well Depth (Ft): 144.0 Ft
	Boring Diameter (in): 12.25"/7.88"



Project Name: REFUSE DISPOSAL AREA WELLS	Boring/Well Number: MW-3M
Owner/Client: SOLDIER CREEK COAL COMPANY	Boring/Well Location: 2,242,502.68 E 485,090.63 N
Project Number: C159-06	Reference Elevation: 6,230.13
Date Drilled: 03/27/91	Reference Point: GROUND SURFACE
Logged By: BKB	Drilling Contractor: ZIMMERMAN WELL SERVICE
First occurrence of G.W.: NA	Drilling Method: AIR-ROTARY
Dates Measured: NA	Rig Type: INGERSOL-RAND
Static W.L.: NA	Boring Depth (ft): 236.0 ft
03/30/91	Well Depth (ft): 236.0 ft
	Boring Diameter (in): 12.25"/7.88"

DEPTH (FT)	GRAPHICAL LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	SAMPLE LOG	WELL COMPLETION DETAILS
0		SILTY CLAY: light grey, 60% clay, 30% silt, 10% sand, dry		
		SANDSTONE: buff to light tan, cemented, dry.		
		tan to light brown, hard, dry.		6" Surface Casing
10		white, very hard, dry.		Cement/Bentonite Grout
		tan, very hard, dry.		
20		SHALE: Weathered Mancos Shale, tan to light grey, 70% clay, 30% silt, soft and friable, weathered, dry.		
		tan to light grey, 80% clay, 20% silt, friable, trace of gypsum, dry.		Bentonite Seal
30		light to dark grey, 95% clay, 5% silt, dry.		
		SHALE: Mancos Shale, light to dark grey, 95% clay, 5% silt, hard, dry.		4" PVC Casing
40		SANDSTONE: tan, 95% sandstone, 5% silt, hard, dry.		
		SHALE: Mancos Shale, light to dark grey, 95% clay, 5% silt, hard, dry.		
		same as above.		
50		same as above, with a trace of gypsum.		
		same as above.		7-7/8" Bore Hole
		same as above.		
60		same as above.		
		same as above.		
70		same as above, with a trace of gypsum.		
		same as above.		
80		same as above.		
		same as above.		
90		same as above.		
		same as above.		
100				

Project Name: REFUSE DISPOSAL AREA WELLS	Boring/Well Number: MW-3M
Owner/Client: SOLDIER CREEK COAL COMPANY	Boring/Well Location: 2, 242, 502.68 E 485, 090.63 N
Project Number: C159-06	Reference Elevation: 6, 230.13
Date Drilled: 03/27/91	Reference Point: GROUND SURFACE
Logged By: BKB	Drilling Contractor: ZIMMERMAN WELL SERVICE
First occurrence of G.W. NA Static W.L. NA	Drilling Method: AIR-ROTARY Rig Type: INGERSOL-RAND
Dates Measured: NA 03/30/91	Boring Depth (Ft): 236.0 Ft Well Depth (Ft): 236.0 Ft
	Boring Diameter (in): 12.25"/7.88"

DEPTH (FT)	GRAPHICAL LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	SAMPLE LOG	WELL COMPLETION DETAILS
100		SHALE Mancos Shale, light to dark grey, 95% clay, 5% silt, Friable, dry		
		... same as above		
110		... same as above		
		... same as above		
120		... same as above		
		... same as above		Bentonite Seal
130		... same as above		
		... same as above		4" PVC Casing
140		... same as above		
		... same as above		
150		... same as above		
		... same as above		7-7/8" Bore Hole
160		... same as above		
		... same as above		
170		... same as above		
		... same as above		
180		... same as above		
		... same as above		
190		... same as above		
		... same as above		
200				



Project Name: REFUSE DISPOSAL AREA WELLS	Boring/Well Number: MW-3M
Owner/Client: SOLDIER CREEK COAL COMPANY	Boring/Well Location: 2,242,502.68 E 485,090.63 N
Project Number: C159-06	Reference Elevation: 5,230.13
	Reference Point: GROUND SURFACE
Date Drilled: 03/27/91	Drilling Contractor: ZIMMERMAN WELL SERVICE
Logged By: BKB	Drilling Method: AIR-ROTARY Rig Type: INGERSOL-RAND
First occurrence of G W NA Static W L NA	Boring Depth (Ft): 236.0 Ft Well Depth (Ft): 236.0 Ft
Dates Measured: NA 03/30/91	Boring Diameter (in): 12.25"/7.88"

DEPTH (FT)	GRAPHICAL LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	SAMPLE LOG	WELL COMPLETION DETAILS
200		SHALE Mancos Shale, light to dark grey, 95% clay, 5% silt, friable, dry		Bentonite Seal
		same as above		7-7/8" Bore Hole
				4" PVC Casing
210		same as above		70 Mesh Sand
		same as above		10-20 Mesh Filter Pack
220		same as above		4" PVC 10-Slot Screen
		same as above		
230		same as above		Threaded End Plug
		TOTAL DEPTH = 236.0 Ft		TD
240				
250				
260				
270				
280				
290				
300				